



## **Desktop Robotic Training System for Teaching PLC Control, Robotic Technology, and Pneumatic Applications**

TII's MB500 Pneumatic Robotics Module is an introductory robotics educational system designed to provide students with an understanding of how pneumatic components work together in a pick-and-place robotic arm application. The student learns how to create, edit, run and monitor robot programs using a programmable logic controller (PLC) using ladder logic computer programming software.

Although this robotic system is designed as a PLC application module, this same module can be used to supplement the skills developed by mastering the objectives of TII's MB200 Principles of Pneumatics training system.

With the optional toggle switch pendant, the MB500 can be operated stand-alone by allowing the student to control the robot motions via manually toggling the pendant switches on and off.

MB500 learning activities begin by studying the history and types of robots; individual axes of motion are computer programmed one axis at a time; a motion map is created followed by an integration of all three axes and the gripper using a PLC (customer supplied) for automated motion control. The robot requires shop air, compressor, or MB200 Training System.

TII's curriculum is in a 10-activity modular format with pre and post assessment testing and assumes some knowledge of PLCs. The curriculum allows for self-paced, individualized instruction and training.

TII's MB500 Pneumatic Robotics Module is one of the building blocks in the TII Fundamentals of Technology product line. Other systems include Principles of Electricity, Pneumatics, Hydraulics, Mechanisms, Sensors and PLCs.

# SPECIFICATIONS

---

## The MB501 Pneumatic Robot Arm features:

- Three axes of motion, four degrees of freedom and a gripper using cylindrical coordinate arm geometry.
- Industrial pneumatic gripper with removable fingers for greater flexibility.
- Flow control valves for speed control of the base, extension, and elevation motions.
- Safe operating pressure of 60 psi (Recommended).

## The MB502 Handheld Pendant features:

- Control box for axes control includes four three-position toggle switches.
- Built-in 24 VDC power supply.
- Four plug interface harness for connection to the MB505 Valve Pack.

## The MB505 Programmable Valve Pack features:

- Terminal strip and four pneumatic solenoid valves (24 VDC).
- Eight-port distribution manifold.
- Flow-controlled input port on the manifold and a protective shield over the terminal strip for safety.
- Easy electrical interface harness to PLC.

### Robot Range of Motion:

Base Rotation: 180 degrees  
Elevation (Shoulder): 2 in.  
Extension (Elbow): 2 in.  
Gripper (Open/Close): 0.5 in.

## CURRICULUM:

The MB500 curriculum was designed, reviewed, and tested by a panel of experienced educators. The 10-day activity modular curriculum includes pre and post assessment testing.

### MB500 Robot Arm Curriculum

- Instructor Information
  - Pre Test
  - History of Robotics
  - Types of Robots
  - Robot Arm Familiarization
  - Rotation Motion: Base
  - Linear Motion: Shoulder and Elbow
  - Gripper Motion
  - Motion Mapping
  - Exercising the Robot – All Motions
  - Post Test
- 
- Robotics Dictionary
  - Bright Idea – Design an Experiment
  - Closer Look – Exploring Robots

### System Dimensions:

Robot Arm: 12 in. H x 11 in. (retracted)  
Valve Pack Base: 13 in. L x 8 in. W  
Shipping Weight: 15 lbs.

---

*For more information, customer service and technical assistance, call toll-free:*

**New England Academic Representative:**



**Technology Education Concepts**

1-800-338-2238 | [www.TECedu.com](http://www.TECedu.com) | [info@TECedu.com](mailto:info@TECedu.com)